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Urban Informatics for Rural Knowledge Economies

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ABSTRACT

This position paper provides an overview of a proposed study that seeks to design and develop tools, methods and applications of urban informatics to promote an innovation culture and knowledge economy in regional Queensland. The National Broadband Network has the potential to leapfrog regional Queensland to join the knowledge economy, but effective applications and content strategies are required. The Edge is the Queensland Government's Digital Culture Centre to engage young people in the technology/culture nexus. This position paper provides an overview of a proposed study that will set up Living Labs at The Edge and in a new precinct in rural Queensland (Goondiwindi) as sites to trial strategies and applications that engage people in entrepreneurial thinking, sustainability initiatives, and new creative practices across the urban and rural boundaries.

Author Keywords

Urban Informatics, creativity, innovation, engagement, knowledge economy, rural, regional, libraries, Queensland

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

PREAMBLE

At OZCHI 2008, Foth organised and introduced a panel discussion on "Urban Informatics Beyond The City" that was MC'ed by Michael Arnold (University of Melbourne) including panel members Bharat Dave (University of Melbourne); Ann Light (Sheffield Hallam University, UK); Nancy Odendaal (University of KwaZulu-Natal, South Africa); and Monica Whitty (Nottingham Trent University, UK). The panel's abstract provides some context to the following position paper:

Urban informatics research and development is positioned at the intersection of people, place and technology with a focus on cities, locative media and mobile technology. In seeking interdisciplinarity an undifferentiated attention on the 'urban' may segregate rather than connect. This panel hopes to help critically analyse the specificities of particular cities across the world and their residents, and a city's contextual embeddedness with a view to establish a heightened awareness of the assumptions behind urban informatics.

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Urban residents need to be appreciated as differentiated individuals that are situated in a variety of time and place settings attached to a historical context of personal experiences. Social networks form between these residents and commuters and visitors that move in and out of cities. These connections nurture symbiotic relationships and exchanges between urban, rural and remote areas. This panel will challenge and debate the 'urban' focus and ask, how this research contributes to address issues and opportunities 'beyond the urban.' We want to unpack 'the city' in order to appreciate its role in a broader and global context, as a node in a network of flows, as a centre of a region, or as a capital of a nation-state.

The panel discussion that unfolded was fascinating and insightful, and ever since then we have played with the thought of conceiving of a research project that would tie together urban and rural, city and country aspects and interests of HCI in a meaningful way. The motive for doing so is to challenge and debate the 'urban' focus and ask, how this research contributes to address issues and opportunities 'beyond the urban.' In leading into this discussion, we assume that the realm of urban informatics [6] comprises not just the physical city. Rather, these inquiries touch upon other conceptual compounds that spill over beyond the urban in complex ways.

We present the following research proposal with two goals in mind: First, as a position statement to introduce our thinking in the context of the workshop's theme of Rural HCI, and second, to invite constructive feedback.

INTRODUCTION

According to Quiggin [10], around half of all people in Australia are employed in the exchange and processing of information (e.g. education, entertainment, business services, management, and many aspects of health). In addition, many more are engaged in the non-monetised creation and exchange of information. In modern knowledge economies, knowledge intensive services in education, information services, the creative industries, and business services represent approximately 25% of GDP, which is even more than the new science sector (e.g. agricultural biotech, fibre, construction materials, energy and pharmaceuticals) which accounts for only about 15% of these economies [11].

The end users for this proposed research are local government authorities, city and regional councils, libraries and other parts of the cultural industries sector, especially in regional Queensland. These entities will be able to use this research to engage their clients, constituents, and citizens in critical thinking, green

programs, creative practices, and entrepreneurial initiatives. This study will trial technology innovations in a Living Lab setup to explore the new role of cultural institutions in the knowledge economy with a specific focus on regional Queensland.

Effective participation and community engagement in decision making about the future requires informed choice. Choice requires literacy. Libraries and other parts of the cultural and creative industries sector have a role to play therefore in:

- building capacity to increase literacies to interpret local knowledge and implications of global affairs;
- disseminating information and facilitating support in a peer to peer fashion;
- building scale to engage in conversations, be heard and take action, and;
- raising public interest in the global-local nexus of issues that affect our ability to create and shape a sustainable and prosperous future.

These are the benefits of the research to the end users that will be developed in an iterative approach with work-in-progress being released in half-yearly cycles.

THE EDGE

The Edge (<http://edgeqld.org.au>) is a particularly relevant and insightful case study for this program of research, because it allows to test theoretical and conceptual points in a real-world environment. The Edge is the Queensland Government's flagship Digital Culture Centre – a prototype concept of the State Library of Queensland to explore new technology and new technological practice and their applicability to libraries in the 21st century, in the knowledge economy, and in the Queensland innovation system. The Edge underlines the library's claim to become a cultural and knowledge destination. Although open to all, The Edge has been predominantly designated as a place for young Queenslanders for experimentation and creativity, giving them contemporary tools to explore critical ideas, sustainability initiatives, new design practices, and media making. As a cornerstone of the Queensland Government's *arts culture + me Children and Young People in Arts Action Plan 2008 – 2011* [1], The Edge is guided by an explicit focus on participation, engagement and collaboration with and through young people.

We want to explore new engagement activities that are strategically positioned to assess the added value that The Edge can provide to the Queensland society as a new prototype library space. The project will benefit The Edge by expanding its outreach beyond Brisbane and increasing the scope and scale of its programming by offering stimulus events and recruiting visitors and students with promise as catalysts or residents. It will help The Edge to meet their goal of moving from an "engagement for" to an "engagement through young people" model. Additionally, The Edge subscribes to a whole-of-state remit, and so exploring opportunities that reach into Queensland's regional centres and rural areas is of great interest to them.

RESEARCH OBJECTIVES

The following research objectives were discussed in more detail at the Healthy Cities conference 2011 [5].

Objective #1: People, and the Challenge of Creativity

This study will explore the opportunities of urban informatics to design and develop tools, methods and applications that foster participation, the democratisation of knowledge, and new creative practices. Targeting social inclusion and systemic disadvantage, one of the study's goals is to explore new ways to increase access to these applications and associated literacy skills for all, in order to enable more people to bring about significant changes in society, specifically to employ human creativity to address concerns relating to regional development and economic prosperity.

Objective #2: Technology, and the Challenge of Innovation

This study will examine how methods and applications of urban informatics can be designed and combined to develop and test tools and resources that support user-led innovation with a view to promote an innovation culture and knowledge economy in regional centres and areas of Queensland.

Objective #3: Place, and the Challenge of Engagement

This study will establish and test the creation of sites within library spaces that are dedicated to place-based applications of urban informatics with a view to deliver community and civic engagement strategies. Embracing both new technology and new technological practice, these library spaces may be better described as 'ideas stores,' 'digital culture hubs,' 'knowledge clearinghouses,' or 'innovation incubators.' The study will evaluate how these sites can enable libraries to add value to new stakeholder groups that may previously not have considered libraries to offer much for them, such as future prospects and pathways for people experiencing systemic disadvantage, and new sources and outlets of commercial innovation for local businesses.

APPROACH

The research methodology comprises an initial ethnographic phase of immersion (A); three iterative action research cycles which involve design studios utilising use scenarios and human-centred design methods (B) as well as rapid prototyping and testing (C); and a final evaluation (D). Each of the three action research cycles is dedicated to one of the three aims of the study on Creativity, Innovation, and Engagement. Data collected will include visitor observations during regular activities at The Edge and in Goondiwindi (as part of a new RDA funded infrastructure development project, see Fig. 1) as well as during workshop activities, in-depth and group interviews, creative outcomes from the design studios and workshops, usability test results, and usage log files from servers hosting web or mobile applications developed as part of the study.

PHASE A: Immersion and Living Labs Setup

The centrepiece of the proposed study's methodology will be the setup of 'Living Labs' both at The Edge and in Goondiwindi which aim to involve visitors, users and students as public actors rather than passive receivers.

Participants in these new Creativity & Science Labs will be able to work on real-life problems through projects and workshops that are aligned with the thematic focus of combining design, science and technology. These labs will become a hive for the spread of ideas and technologies into the wider community. A similar approach was successfully trialled by Prof. Carlo Ratti during his stay as inaugural Queensland Innovator in Residence 2009, a program jointly led by the Queensland Government, the State Library, and QUT. "Living Laboratories are environments for innovation and development where users are exposed to new solutions in (semi)realistic contexts, as part of medium or long-term studies targeting evaluation of new design solutions and discovery of innovation opportunities." [2]. Before The Edge was officially opened on 26 Feb 2010, Ratti and Foth already successfully trialled a Living Lab setup at an adjacent space of SLQ, called The Studio. The Edge lends itself to adopt this approach for the purpose of the proposed study (Fig. 2). The labs will be set up in Year 1 and continue throughout Years 2 and 3 with a view to turn the labs into what has earlier been described as 'ideas store,' or 'innovation incubator.'

PHASE B: User Studies

Study participants will be recruited from the pool of visitors via a combined approach guided by Patton [9] and Dillman [3] that includes both online / social media channels and printed media in order to recruit a mix of both users and non-users of social media, as well as visitors and non-visitors [12]. A basic questionnaire will be administered as a screening instrument in order to recruit study participants for diversity of demographic factors and social media / digital technology exposure using maximum variation sampling [9]. The study aims for a sample of 20 study participants in semi-structured interviews and focus groups.

PHASE C: Design Prototyping

Taking the form of prototypes exploring relationships between people, place and technology, the study's aims align closely with the Queensland Government's Toward Q2 strategy and its pioneering investment into The Edge as a new space to investigate the very same questions that the fellowship poses: *Design 1 focus*: participation, the democratisation of knowledge, and new creative practices. The design theme will be on environmental concerns, eg. the 'Flood of Ideas' collection recently held at The Edge (floodofideas.org.au) to encourage people's capacity to bring about change within their local community by networking people using the equipment, skillsets, human resources and opportunities afforded by a prototype digital culture centre. *Design 2 focus*: user-led innovation, e.g. data mash-ups comprising local government and library data, social media, and sensor network data, such as those presented at the national libraryhack.org competition. (Foth's PhD student Mark Bilandzic won the Digital Media mashup award.) *Design 3 focus*: place-based civic engagement, e.g. the 2010 Neogeography project at the Cooroy library as part of one of our previous ARC Linkage grants, however, here, specifically with a focus on new sources and outlets of commercial innovation for local businesses. This goal has

been endorsed by the Director of The Edge, and in conversations that Foth had earlier this year with Bill Macnaught, the new National Librarian of NZ.

PHASE D: Impact Evaluation

Although the action research approach already includes repeated stages of reflection and refinement, the last phase of the study calls for a final holistic evaluation. This impact evaluation will look specifically into how the experiments and findings at the case study sites (Brisbane and Goondiwindi) can inform best practice models for libraries and cultural institutions with regional and state-wide applicability and transferability. Participatory evaluation methodologies have long been effectively used in a diversity of fields, including education, social services, and health [4]. This study will use a variant developed specifically for ICT projects by Foth and colleagues [7, 8]. The final evaluation phase will be a continuation of the action research cycles already established but supplemented with ICT usage data and respondent interviews. The method will incorporate a critical reflection workshop, and will involve participants from The Edge's management team, visitors, the State Library of Queensland, Goondiwindi Regional Council and other relevant representatives. As per [7] the workshop will include an overall analytical framework for assembling and interrogating the above evidence base in terms of delivering the study's aims and to verify the study's claims about the impact of urban informatics tools and applications to support place-based creativity, innovation, and engagement in regional Queensland.

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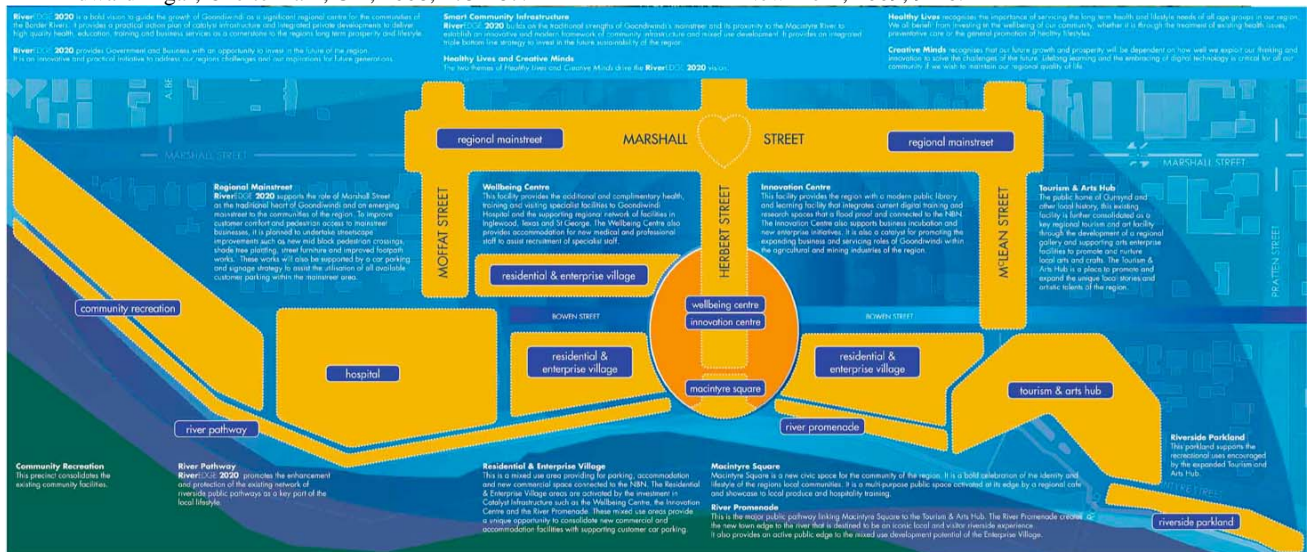


Figure 1: RiverEdge 2020 development proposal and community consultation draft by Goondiwindi Regional Council

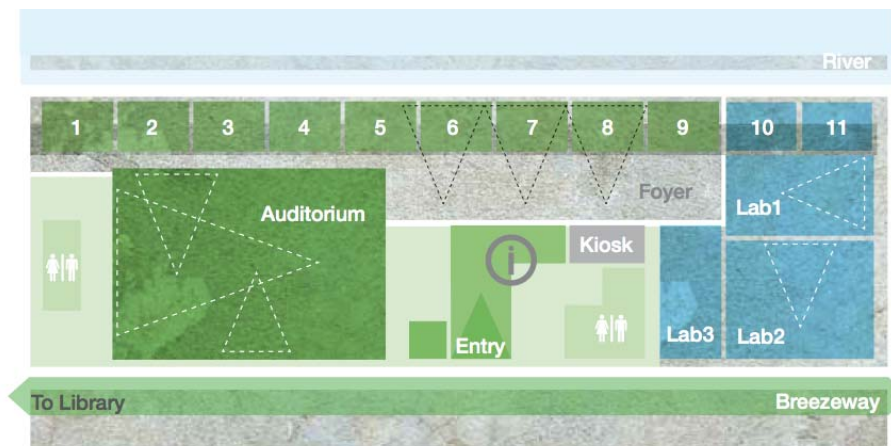


Figure 2: Floorplan of The Edge with the proposed Living Lab in Lab 2



Figure 3: Lab 2 at The Edge